Fire and the invasive annual grass *Microstegium vimineum* in eastern deciduous forests

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Grass invasions and fire

Effects of invasions on fire behavior:

- ⬆ Fuel load
- ⬆ Fire return interval
- ⬆ Intensity
- ⬆ Spatial extent

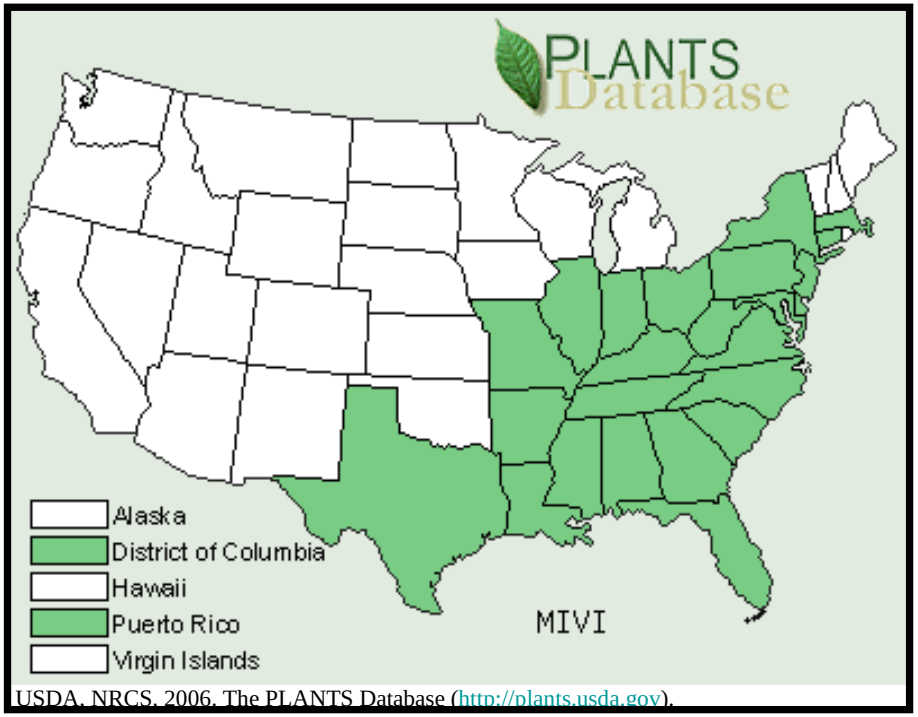
Bromus fire in western U.S.

Effects of fires in invaded areas:

- ⬆ Invasions
- ⬇ Native species diversity and abundance
- Alter other ecosystem functions

Microstegium vimineum (Japanese stiltgrass)

- Annual grass
- High seed production
- High density growth

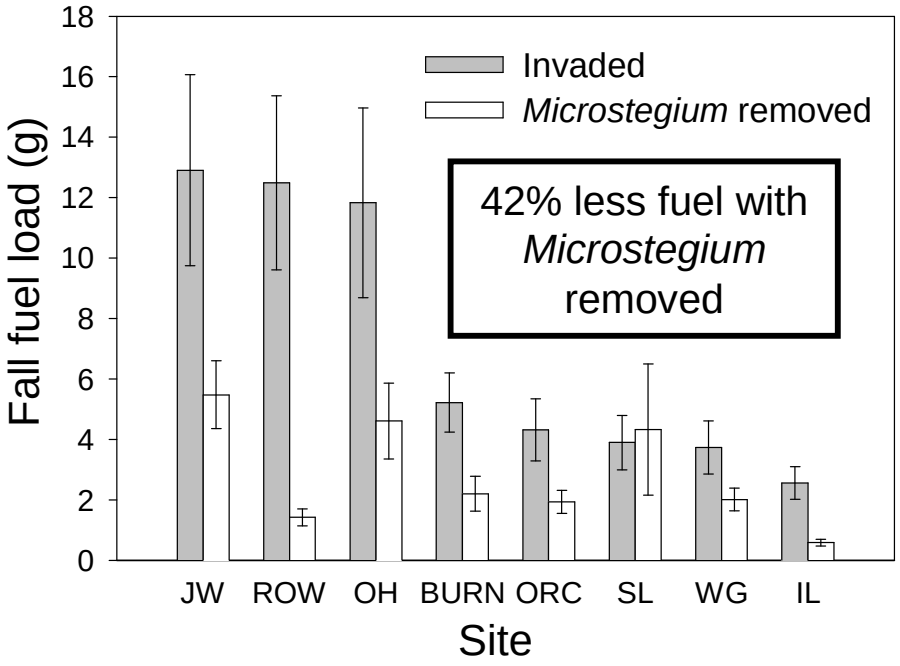


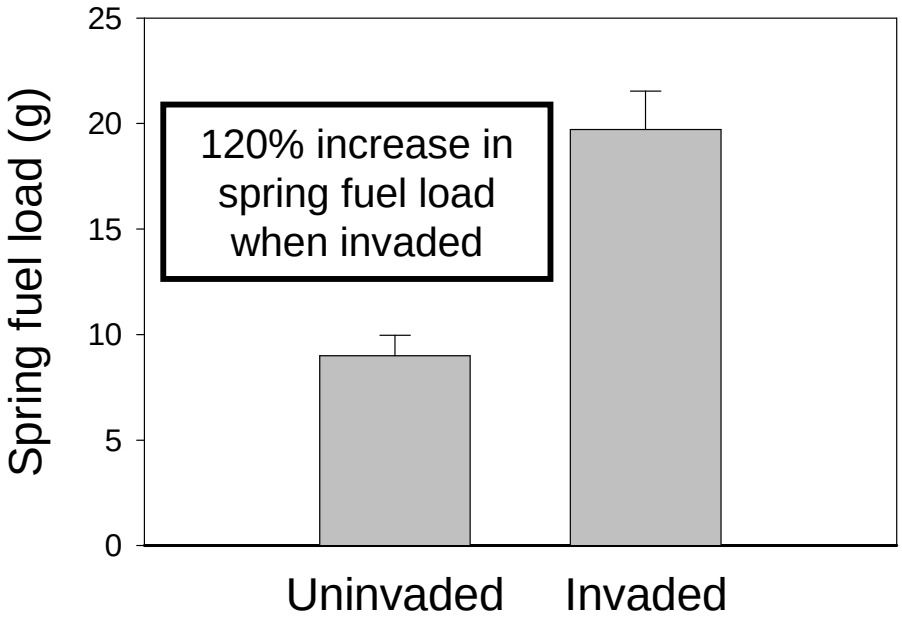
* Range overlaps where fire is used to manage for oak dominated forests

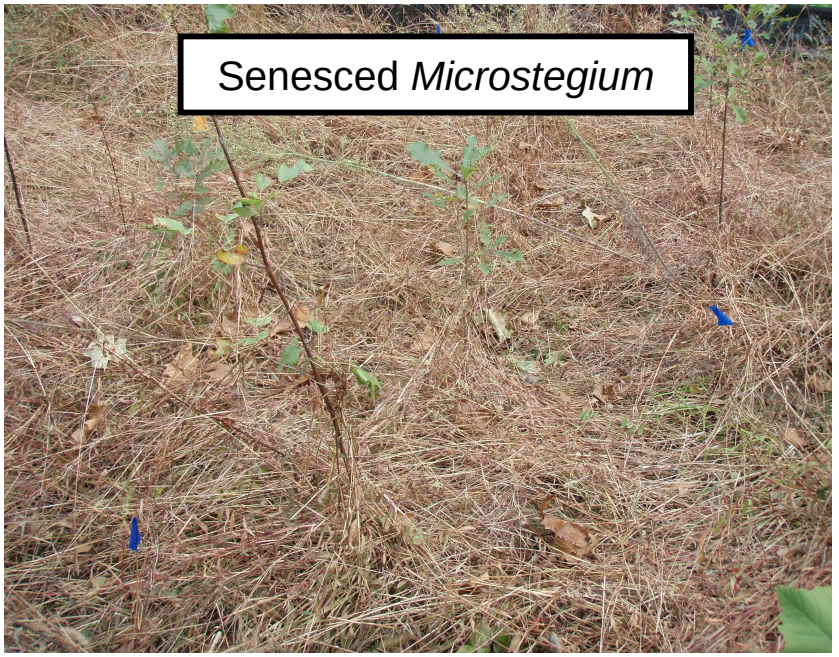
Microstegium habitat

- invades sites full sun to <5% ambient light

Effects of *Microstegium* on fuel loads







Hypotheses:

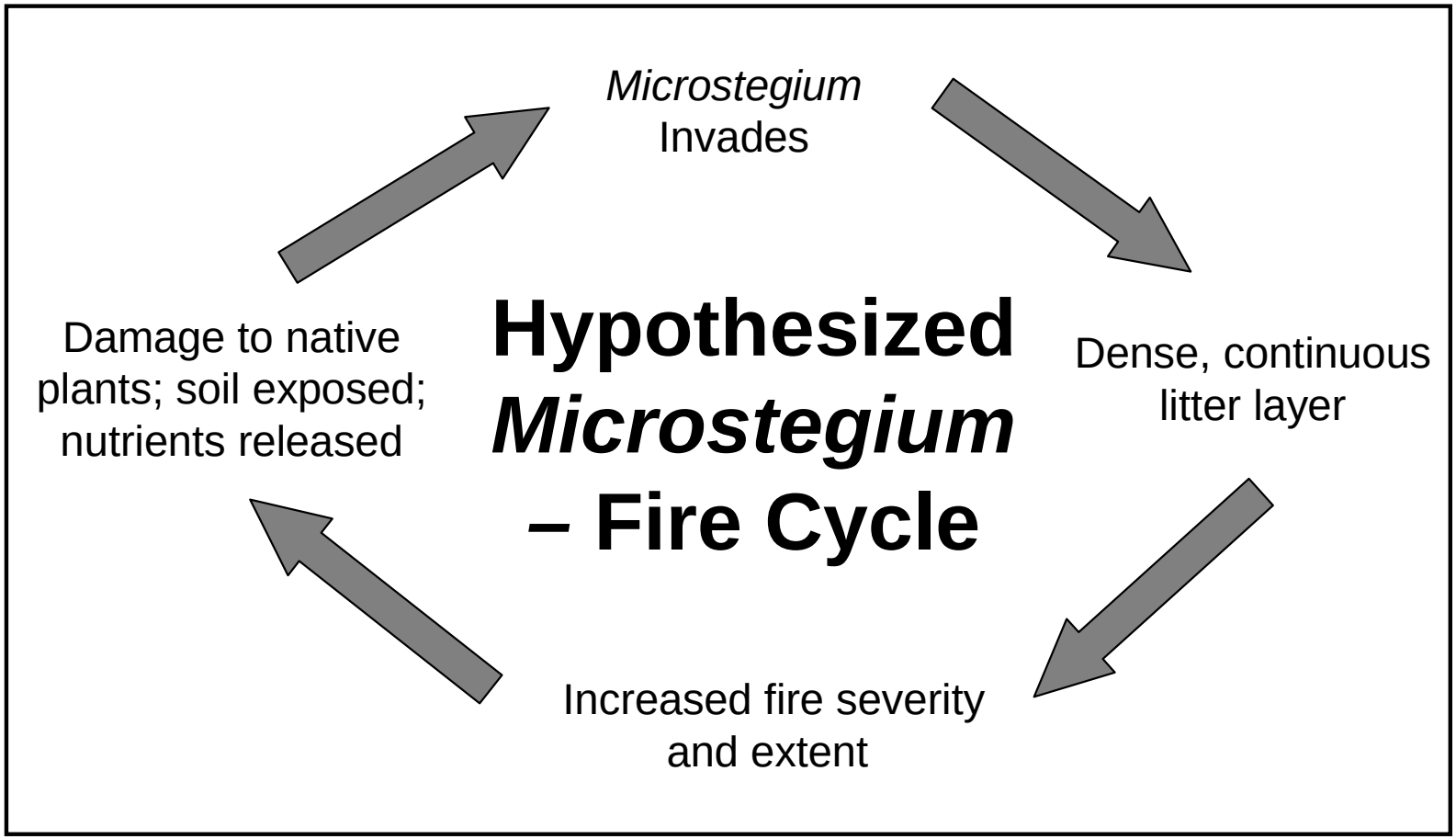
- **More intense fires in invaded areas**
- **Greater spatial extent of fires**
- **More damage to native species with fires in invaded areas**

Microstegium invasions following fires

Fires:

- **Increase nutrient availability**
- **Expose soil (quality germination sites)**
- **Damage some native species (reduced competition)**

Greater *Microstegium* density and larger invasions



Research plan:

- Experimental burns (10 treatments)
- Prescribed fires (uninvaded and invaded areas)

Panel discussion

1. Have plant invasions changed your burn plans?
2. What are your observations of post-burn invasions?
3. Have you conducted pre or post-burn management of invasions?
4. Have you successfully used fire to manage invasions?
5. Which invasive species are you most concerned about in terms of their interaction with fire?
6. Are there new invaders that are a concern?
7. What are the characteristics of communities where fire is a suitable tool to control invasive plants?
8. How does the timing of prescribed burns influence native and invasive species?